

Appl. No. 09/926,375
Response dated March 22, 2006
Reply to Office action of January 12, 2006.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A transgenic non-human mammal that carries in the genome of its somatic and germ cells a transgene construct comprising (a) a transgene encoding a phytase protein operably linked to (b) a first mammalian regulatory sequence for salivary gland expression of said protein and (c) a signal sequence for secretion of said protein wherein said mammal is selected from the group consisting of pigs, goats, sheep, cows and horses and the mammal expresses and secretes the protein in its salivary glands.
2. (Previously presented) The mammal of claim 1 wherein said first regulatory sequence comprises a salivary protein promoter/enhancer sequence.
3. (Previously presented) The mammal of claim 2 wherein said saliva protein promoter/enhancer sequence comprises a parotid secretory protein (PSP) promoter/enhancer, a proline-rich protein (PRP) promoter/enhancer or a salivary amylase promoter/enhancer.
4. (Previously presented) The mammal of claim 3 wherein said promoter/enhancer is a parotid secretory protein (PSP) promoter/enhancer.
5. (Previously presented) The mammal of claim 4 wherein said parotid secretory protein (PSP) promoter/enhancer is derived from a mouse.
6. (Previously presented) The mammal of claim 3 wherein said promoter/enhancer is a proline-rich protein (PRP) promoter/enhancer.

Appl. No. 09/926,375
Response dated March 22, 2006
Reply to Office action of January 12, 2006.

7. (Previously presented) The mammal of claim 6 wherein said proline-rich protein (PRP) promoter/enhancer is derived from a rat.
8. (Previously presented) The mammal of claim 1 wherein said transgene is further operably linked to (d) one or more second regulatory sequences including enhancers, transcription regulatory sequences, termination sequences, and polyadenylation sites.
9. (Previously presented) The mammal of claim 1 wherein said mammal is a pig.
10. (Previously presented) The mammal of claim 1 wherein said phytase is *Escherichia coli* AppA phytase.
11. (Previously presented) The mammal of claim 1 wherein said mammal is a pig and said first regulatory sequence comprises a parotid secretory protein (PSP) promoter/enhancer or a proline-rich protein (PRP) promoter/enhancer.
12. (Previously presented) The mammal of claim 1 wherein said transgene construct comprises a nucleic acid sequence according to SEQ ID NO:3, SEQ ID NO:5; or SEQ ID NO:7.

Claims 13-18 (Canceled).

19. (Currently amended) A method of expressing and secreting a phytase protein in the ~~gastrointestinal tract~~ salivary gland of a non-human mammal, the method comprising the steps of:

a) introducing a transgene construct into a non-human mammalian embryo such that a non-human transgenic mammal that develops from said embryo has a genome that comprises said transgene construct, wherein said transgene construct comprises:

- i) a transgene encoding said phytase protein,
- ii) at least one mammalian regulatory sequence for salivary gland expression of said phytase protein, and

Appl. No. 09/926,375
Response dated March 22, 2006
Reply to Office action of January 12, 2006.

(iii) a signal sequence for secretion of said phytase protein
b) transferring said embryo to a foster female; and,
c) developing said embryo into said transgenic mammal
wherein said phytase is expressed and secreted in the salivary gland ~~gastrointestinal tract~~ of said mammal, wherein said mammal is selected from the group consisting of pigs, goats, sheep, cows and horses.

Claims 20-21 (Cancelled)

22. (Previously presented) The method of claim 19 wherein said salivary gland is a parotid gland, submaxillary gland, or a submandibular gland.

Claim 23 (Canceled)

24. (Original) The method of claim 19 wherein said at least one regulatory sequence comprises a salivary protein promoter/enhancer sequence.

Claims 25-26 (Cancelled)

27. (Previously presented) A method according to claim 19 wherein said phytase is *Escherichia coli* AppA phytase.

28. (Original) The method of claim 19 wherein said transgene construct comprises a nucleic acid sequence according to SEQ ID NO:3, SEQ ID NO:5, or SEQ ID NO:7.

29. (Previously presented) A transgenic mammal prepared according to the method of claim 19, or a progeny thereof.

Appl. No. 09/926,375
Response dated March 22, 2006
Reply to Office action of January 12, 2006.

30. (Previously presented) A process for producing a phytase protein comprising the steps of:

a) obtaining salivary gland secretion containing said phytase protein from a non-human transgenic mammal selected from the group consisting of pigs, goats sheep, cows and horses, said mammal containing within its genome a transgene construct, wherein said transgene construct comprises:

- i) a transgene encoding said phytase protein,
- ii) at least one mammalian regulatory sequence for salivary gland specific expression of said protein, and
- (iii) a signal sequence for secretion of said phytase protein; and

extracting said protein from said saliva.

31. (Original) The process of claim 30 wherein said at least one regulatory sequence comprises a salivary protein promoter/enhancer sequence.

Claim 32 (Canceled)

33. (Original) The process of claim 30 wherein said transgene construct comprises a nucleic acid sequence according to SEQ ID NO:3, SEQ ID NO:5; or SEQ ID NO:7.

34. (Previously presented) The process of claim 30 wherein said phytase is *Escherichia coli* AppA phytase.

35. (Original) The process of claim 30 wherein said salivary gland is a parotid gland, submaxillary, or a submandibular gland.

Claims 36-57 (Canceled)